AUTHOR INDEX OF PAPERS PUBLISHED IN VOLUME 55 OF THE JOURNAL AND OF ABSTRACTS OF PAPERS PRESENTED AT THE ANNUAL* MEETING, THE SOUTHERN[S] DIVISION MEETING, AND THE EASTERN[E] DIVISIONAL MEETING OF THE AMERICAN DAIRY SCIENCE ASSOCIATION

Aceto, N. C., 875
Adams, D. R., 1487
Adams, G. D., 399[S]; 1787
Adams, P., 865
Ainslie, H. R., 1517
Aitchison, T. E., 840
Alford, J. A., 668*; 1331[E]
Alicino, N. J., 272
Allaire, F. R., 683*
Althen, T. G., 331
Amann, R. P., 1005; 1631
Amundson, C. H., 1561
Anderson, B. A., 1396
Anderson, Corine R., 663*
Anderson, G. H., 1073
Anderson, M. J., 692*
Anderson, R. R., 75; 698*; 699*
Andrus, D. F., 708*
Arave, C. W., 683*
Armstrong, D. V., 695*
Arnold, R. G., 1069
Arroyo-Aguilu, J. A., 1266
Askew, E. W., 83
Auclair, P. D., 1561
Aurand, L. W., 678*
Awa, O. A., 1174

Babb, M. R., 870
Babel, F. J., 664*
Bade, D. H., 328
Baggott, A. J., Jr., 392[S]
Baile, C. A., 606; 822; 1461
Bailey, L. F., 681*
Baker, A. S., 640
Baker, B. E., 633
Baker, J. S., 783
Baldwin, R. E., 1018
Baldwin, V. L., 395[S]
Balok, C. J., 1768
Banerjee, M. R., 660*
Bargeloh, J. F., 707*
Barnard, S. E., 134
Barnhart, H. M., 1069
Barrantes, R. E., 631
Barrington, G. P., 865*
Basch, J. J., 678*
Basinger, J. U., 396[S]
Bath, D. L., 693*; 1607
Batra, T. R., 717*
Bauer, H., 1375
Bauman, D. E., 662*; 712*
Baumgardt, B. R., 822
Baxter, H. D., 398[S]
Beatty, J. F., 401[S]
Beery, A. M., 671*
Beitz, D. C., 707*
Belasco, I. J., 353
Bennick, M. R., 706*; 712*
Benson, J. D., 83
Berger, P. J., 683*
Berlin, E., 1396
Bhattad, S. M., 671*
Bickert, W. G., 695*; 711*
Biggs, D. A., 650
Bills, D. D., 1570
Bingham, E. W., 676*
Bird, E. W., 897
Birk, Yehudith, 1544
Bishop, R. B., 711*
Bitman, J., 204; 677*; 678*; 714*; 716*; 1597
Black, R. T., 413; 1016
Blackmon, D. M., 706*; 707*
Blackwood, P. W., 577
Bland, B. J., 400[S]
Blosser, T. H., 93
Bodine, A. B., 392[S]
Bodoh, G. W., 682*; 851
Bodyfelt, F. W., 1570
Bohren, H., 165; 673*
Bonewitz, E. R., 334
Booren, A., 660*
Borges, M. S., 676*
Borich, P. J., 679*
Bouchard, R., 710*
Bourland, C. T., 413; 1016
Bowman, M. C., 777
Boyd, L. J., 995
Bozworth, R. W., 334
Bracco, U., 165
Brantley, S. A., 667*
Branton, C., 113; 395[S]
Braund, D. G., 1327[E]; 1328[E]
Brewington, C. R., 263
Bringe, A. N., 698*
Britt, J. H., 401[S]; 598
Brodie, B. O., 706*
Brower, D. P., 661*
Brown, B. L., 65
Brown, C. A., 395[S]
Brown, J. E., 399[S]; 684*; 688*
Brown, K. I., 372
Brown, L. D., 693*; 805
Brown, W. H., 983; 1499
Brum, E. W., 494
Brunner, J. R., 1064
Bryant, J. M., 692*
Bryant, J. N., 200
Bryant, S. G., 399[S]; 684*; 688*
Buckalew, J. M., 1683
Buffington, R. E., 680*
Bull, L. S., 707*
Burfening, P. J., 673*
Burkhart, D. J., 707*
Burnside, E. B., 716*; 717*; 829
Bush, L. J., 130; 399[S]; 1156; 1787
Butler, J. E., 151
Button, F. S., 935
Byrne, W. F., 400[S]; 699*

Caldwell, D. M., 1320
Call, E. P., 334
Callahan, C. J., 783
Calvert, C. C., 706*
Cameron, N. W., 396[S]
Campbell, J. R., 1018
Cannon, R. Y., 669*
Cantrell, S. E., 708*
Cardwell, J. T., 392[S]
Carlson, J. R., 790
Carpenter, J. R., 1750
Carr, S. B., 394[S]
Carrero, R., 1492
Carroll, R. J., 661*
Carter, G. R., 867
Carter, H. W., 214
Caruolo, E. V., 713*
Chandan, R. C., 1232
Chandler, P. T., 238; 394[S]; 690*; 693*; 709*; 1281; 1481; 1741
Chaplin, R. K., 702*
Chapman, D., 1232
Chaturvedi, S. K., 665*
Chen, C. C. W., 759
Chen, M. H., 666*
Clark, J. H., 706*; 708*; 1474
Clark, J. L., 1160
Clark, N. A., 399[S]
Clark, R. M., 257
Clifton, C. M., 693*
Cloninger, M. R., 1018
Cogan, T. M., 382

Collins, E. B., 665°; 669°; 1022; 1405
Collins, J. A., 661°; 666°
Colovos, N. F., 257; 460; 1328E; 1757
Concannon, P. W., 697°
Conneta, A., 403
Conlin, B. J., 679°; 680°
Conner, G. H., 867
Connolly, E. J., 393S
Conrad, H. R., 702°; 707°; 710°; 1613
Convey, E. M., 665°; 711°; 1170
Cook, R. M., 696°; 1470
Cooney, C. M., 567; 673°
Coppock, C. E., 245; 325; 783
Cornell, D. G., 173
Cotton, T. W., 392S
Coulson, E. J., 1058
Coulter, S. T., 668°; 1574
Cox, E. L., 125
Cox, S., 667°
Crabo, B. G., 372
Creegan, M. E., 208; 454; 682°; 683°; 1602
Crowl, B. W., 325
Cullen, J., 1232
Cummins, E., 662°; 713°
Cunningham, J. D., 19
Cunningham, J. L., 1787
Cunningham, M. D., 367
Cunningham, P. J., 705°
Curson, B., 614

D Addamio, G. H., 698°
Dairiki, T., 678°
Daly, C., 1031
Daniels, L. B., 708°
Darby, W. J., 1323
Darnall, D. W., 1768
Dash, S. K., 102; 700°
Datta, R. D., 677°
Davenport, D. G., 396S; 529
Davis, A. V., 704°
Davis, C. L., 706°; 708°
Davis, G. V., 701°
Deane, D. D., 660°
DeLuca, H. F., 689°; 698°
Derbyshire, J. C., 687°
Derrig, R. G., 708°
DeVilbiss, E. D., 173; 1660
Dickerson, R. W., Jr., 177; 536
Dickey, J. F., 697°
Dicninson, F. N., 507; 691°; 1735
Dill, C. W., 200
Dimick, P. S., 265; 688°; 713°; 919
Dobson, R. C., 768
Dodd, J. P., 395S
Dolge, K. L., 1327E; 1328E
Donker, J. D., 702°
Donnelly, P. E., 714°
Donogue, Susan, 1636
Douglas, F. W., Jr., 204; 677°; 714°
Dracy, A. E., 1156
Dryden, L. P., 204; 714°; 716°; 1597
Dunham, J. R., 768
Dunlap, S. E., 400S
Dunn, H. O., 524

E astwood, B. R., 1123
Eaton, H. D., 232; 339; 1636
Eberhart, R. J., 379; 645; 1683; 1792
Edgerton, L. A., 1170
Edmondson, L. F., 204; 677°; 714°
Eigel, W. N., 659°
Eitenmiller, R. R., 675°
El-Hifnawi, M., 1220
Elliker, P. R., 661°; 668°; 1031
Elliot, J. M., 474
Elliott, C. S., Jr., 1692
Ellzey, H. D., 358
El-Negoumy, A. M., 673°
Emery, R. S., 83; 662°; 693°; 713°; 926
Emmons, D. B., 1225
England, D. C., 661°
Englestad, W., 703°
Erb, R. E., 65
Erdody, Paula, 1077
Erickson, R. W., 680°; 681°; 689°; 708°
Ernstrom, C. A., 298; 671°
Erwin, R. E., 298; 677°
Escano, J. R., 397S
Esdale, W. J., 964
Evans, D. L., 395S
Evans, J. L., 1266; 1329E; 1330E
Everett, R. W., 183; 245; 1256; 1517
Everson, D. O., 682°

F ancy, S. S., 1174
Fenton-May, R. I., 1561
Ferrier, L. K., 726
Ferriera, L. S., 696°
Ferris, D. H., 679°
Ferris, T., 689°
Fieber, M. W., 703°
Fife, C. L., 671°; 679°; 680°
Fisher, L. J., 685°; 714°
Flatt, W. P., 945
Flipse, R. J., 1005
Flynn, C. J., 701°; 708°
Fohrman, M. H., 1602
Foote, R. H., 856
Forster, T. L., 417
Fosgate, O. T., 394S; 396S; 870
Fossum, G., 675°; 1532
Fouts, E. L., 395S
Fowler, P. R., 693°
Fox, F. H., 694°; 695°
Fox, K. K., 1557
Freeman, A. E., 419; 581; 688°; 691°; 840; 1123; 1621
Freeman, M. G., 716°; 717°; 829
Freeman, T. R., 392S
Freymiller, D. D., 80
Friedrich, F. L., 703°
Friend, Beverly A., 675°
Fries, G. F., 706°
Fries, H. I., 232; 339; 1636
Frobish, R. A., 706°; 712°
Fryman, L. R., 931
Fukuwatari, Y., 289
Fulton, L. A., 690°

G abrilidis, G. T., 703°
Gaither, R., 678°
Gallina, A. M., 339
Ganguli, N. C., 677°; 765
Gardner, R. W., 704°; 707°; 989
Garner, D. L., 696°
Garnot, Pascaline, 1641
Garrett, J. N., Jr., 398S, 401S
Gaunt, S. N., 1329E
Gentry, R. P., 706°; 707°
Gerrish, J. B., 711°
Gerrits, R. J., 331
Gilliland, S. E., 661°; 670°; 1028
Goering, H. K., 204; 677°; 678°; 701°; 714°; 716°; 1140; 1275
Gomila, L. F., 396S; 398S; 401S
Gordin, S., 811; 1544
Gordon, C. H., 204; 398S; 687°; 688°; 701°; 714°; 716°; 1140; 1275; 1330E
Gordon, D. T., 905
Gordon, W. G., 261; 1041
Graf, G. C., 1692
Graf, T. F., 532; 880
Graham, E. F., 372
Graham, H. D., 42; 1675
Graves, C. N., 696°
Greenberg, Rae, 261
Groves, M. L., 261; 674°; 1041
Guha, H., 1148

Guidry, A. J., 712°
Gupta, B. N., 867
Guthrie, L. D., 703°
Guthrie, R. S., 183; 1256
Gwazdauskas, F. C., 697°; 1165

Hacker, R. R., 1295
Haenlein, G. F. W., 715°; 1329E
Hafs, H. D., 605°; 995
Hahn, L., 694°; 700°
Hale, G. D., 396S; 689°; 709°; 710°
Hall, R. C., Jr., 232
Hamdan, I. Y., 664°
Hammond, E. G., 1567
Hampton, O., 298
Hansel, W., 697°
Hansen, A. P., 667°; 678°
Hansen, C. M., 709°
Hansen, P. M. T., 671°; 674°
Hardie, A. R., 690°
Harshbarger, K. E., 1474
Hartman, D. A., 694°; 695°
Hartman, G. H., Jr., 675°
Harvey, W. R., 208; 683°
Harwalkar, V. R., 735; 742; 1400
Hasbargen, P. R., 680°
Hasdai, A., 811
Hassan, A. A., 396S; 397S
Hastings, C. W., 675°
Hatton, R. H., 935
Hawkins, G. E., 398S; 686°; 689°
Hawkinson, D., 705°
Hayes, H. H., 257; 1327E
Hayes, R. L., 679°
Head, H. H., 700°
Heald, C. W., 621; 663°; 1085
Hedrick, T. I., 14
Heldman, D. R., 14
Helm, R. E., 979
Hembry, F. G., 1160
Hemken, R. W., 399S; 689°; 931; 935; 1275
Henderson, C. R., 107; 845
Hess, G. S., 1097
Hettinga, D. H., 666°
Hibbs, J. W., 707°; 1613
Hickman, C. G., 432
Hicks, C. L., 726
Hidaglo, J., 165; 673°
Hill, C. G., Jr., 1561
Hill, D. L., 1295
Hill, J. G., 702°
Hill, J. R., Jr., 697°
Hillers, J. K., 417; 682°
Hillman, D., 1290
Hines, H. C., 681°; 697°
Hodgson, A. S., 640; 692°
Hollon, B. F., 113
Holmes, C. R., 397S
Holsinger, V. H., 1557; 1660
Holter, J. B., 257; 460; 701°; 1327E; 1328E; 1757
Hood, L. F., 663°
Hooven, N. W., Jr., 208; 454; 682°; 683°; 690°; 1113
Hoover, W. H., 708°
Horst, R. L., 698°
Hoss, D., 1487
Houlette, Vicki L., 663°
Huang, C. M., 51; 622°; 862; 1013; 1577; 1586
Huang, H. F. S., 396S
Huang, J., 705°
Huber, J. T., 238; 466; 489; 498; 702°; 708°; 709°; 711°; 995; 1290; 1470
Huertas-Vega, E., 401S; 598
Hunt, M. S., 716°; 829
Hunter, A. G., 696°
Hustad, G. O., 1388
Hutjens, M. F., 680°
Hutton, G. A., Jr., 693°; 1607
Hutton, J. B., 714°

Ibrahim, E. A., 971
Infantino, Delores G., 1
Ingalls, J. R., 971
Ingle, D. L., 662°
Irish, W. W., 694°; 695°
Irvine, D. M., 540
Ishizaki, S. M., 959
Ismail, A. A., 1220
Iwasaki, T., 670°

Jacobson, D. R., 396S; 687°; 689°; 709°; 710°; 935
Jacobson, N. L., 707°
Jahn, E., 238
Janolino, V. G., 676°
Janzen, J. J., 392S; 679°
Jara-Almonte, M., 1502
Jelen, P., 668°
Jenny, B. F., 399S; 1481
Jensen, E. L., 690°
Johnson, H. D., 700°
Johnson, J. C., Jr., 777
Johnson, R. H., Jr., 524
Johnson, W. L., 696°
Johnson, Z., 688°
Jones, G. M., 685°
Jones, L .A., 1757
Jones, R. C., 856
Jones, Susan B., 261; 678°; 1041
Jones, V. A., 667°
Jorgensen, N. A., 80; 685°; 689°; 698°
Josephson, R. V., 1050; 1058; 1535

Kalab, M., 1073; 1225
Kalan, E. B., 261; 678°; 1041
Kale, C. G., 671°
Kanjanipibul, N., 959
Kason, C. M., 1420
Kato, R., 1550
Katz, S. E., 272
Keel, V. A., 679°
Keenan, T. W., 51; 662°; 862; 1013; 1577; 1586
Keller, W. J., Jr., 574
Kellogg, D. W., 715°; 1768
Kellogg, R. D., 704°
Kennett, W. S., 1328E
Keown, J. F., 1256
Kesler, E. M., 348
Kiddy, C. A., 681°; 873; 1506
Killian, G. J., 1631
Kim, C. W., 460
Kim, G., 897
King, R. L., 678°; 716°
Kinsella, J. E., 663°; 1085; 1181
Kiyosawa, I., 289; 1550; 1651
Kleyn, D. H., 574
Knott, F. N., 466
Kontson, A., 667°
Koonce, K. L., 113; 398S; 1093
Koprowski, J. A., 664°
Kosikowski, F. V., 670°; 672°
Kraft, L. A., 518
Kral, A. J., 690°; 873; 1185
Kristoffersen, T., 671°; 744
Kruseman, J., 673°
Kulshrestha, D. C., 670°
Kumar, S., 671°; 1237
Kunsman, J. E., Jr., 660°; 677°
Kurtenbach, A. J., 1156
Kurtz, F. E., 667°
Kuwahara, K., 289; 1550; 1651

LaCroix, D. E., 668°
La Croix, D. L., 1331E
Lamb, R. C., 683°; 687°; 692°
Lane, C. B., 392S; 395S
Lane, G. T., 200; 328; 979
Langham, R. F., 867
Laonipon, R. W., 392S
Larsen, H. J., 685°
Larson, B. L., 629; 663°
Leahey, J. M., 701°; 1327E
Ledford, R. A., 666°; 1424
Lee, A. J., 432; 683°
Lee, D. D., Jr., 702°
Leed, T. W., 302
Legates, J. E., 681°; 682°

Leighton, R. E., 328°; 979
Lengemann, F. W., 1775; 1783
Lessard, J. R., 685°
Leuenberger, J. M., 686°
Libbey, L. M., 666°
Lichtenwalner, R. E., 702°; 709°; 711°
Lim, Diana, 753
Lineweaver, J. A., 401[S]; 402[S]
Linzell, J. L., 1316
Liska, B. J., 35; 123; 1300
Lodge, G. A., 685°
Lodge, J. R., 518; 679°
Loewenstein, M., 393[S]; 660°
Lopez, M. H., 1561
Lu, Ming-Hsiung, 698°; 699°
Lucas, J. J., 232; 1636
Ludwick, T. M., 494
Luedecke, L. O., 417
Lund, D. B., 9913
Lyke, W. A., 400[S]
Lynch, G. P., 1243; 1330[E]

McCaffree, J. D., 269
McCarthy, R. D., 265
McCauley, A. D., 694°; 695°
McClellan, D. J., 707°
McCullough, M. E., 480; 484
McDaniel, B. T., 507; 691°; 1735
McDonald, T., 663°
McDonough, F. E., 1330[E]
McDowell, R. E., 1133; 1148
McGill, Ruth, 200
McGilliard, A. D., 589; 1191; 1432; 1439
McGilliard, M. L., 419
McLellon, C. D., 325
McMurtry, J. P., 715°
Macadam, W. R., 1792
MacClure, F. A., 702°
Mackens, D., 393[S]
Macleod, G. K., 439; 446
Mac Rae, H. F., 658
MacQuillan, A. M., 671°
Makdani, D. D., 498; 702°
Malven, P. V., 715°
Mao, I. L., 716; 845
Mao, W., 713°
Manning, P. B., 668°
Marrow, G. S., Jr., 706°
Marshall, G. R., 529
Marshall, R. T., 194; 413; 668°; 1016; 1018
Marshall, S. P., 345; 398[S]
Marth, E. H., 669°; 670°; 1410; 1415
Martin, F. G., 631; 1010
Martin, F. H., 606; 1461
Martin, J. H., 393[S] 577; 1179
Marx, G. D., 693°; 694°
Mathieu, C. M., 1641
Mattick, J. F., 671°
Maubois, J. L., 1641
Maust, L. E., 1133
Maxwell, Charlotte F., 151
Maxwell, W. B., 1077
Meadows, C. E., 226; 680°; 681°
Meek, A. M., 1256
Mehran, M., 671°
Mellad, K. E., 697°
Mellenberger, R. W., 662°; 712°
Merricks, D. L., 710°
Merrill, W. G., 245; 269; 1256
Mertens, D. R., 1018
Michel, R. L., 498
Mickelsen, C. H., 692°
Mickelsen, R., 298
Mickle, J. B., 676°
Mikesell, G. T., 1330[E]
Mikolajcik, E. M., 664°; 668°; 673°; 1050; 1237; 1508
Miles, J. T., 397[S]; 398[S]
Miller, A., III, 666°
Miller, D. D., 715°; 1768
Miller, E., 687°
Miller, G. E., 705°
Miller, J. K., 400[S]; 699°; 1211
Miller, P. D., 845
Miller, R. H., 208; 454; 682°; 683°; 690°; 712°; 1113; 1185; 1602
Miller, R. M., 394[S]
Miller, R. W., 688°; 1597
Miller, W. J., 706°; 707°
Mills, A. C., 400[S]
Minor, T. E., 670°; 1410
Misra, B., 194
Mitchell, J. R., 402[S]
Mitra, R., 700°
Moe, P. W., 318; 480; 685°; 686°; 945; 1106
Montgomery, C., 358
Montgomery, M. J., 275; 397[S]; 398[S]
Moody, E. G., 687°
Moody, E. L., 1487
Moore, E. D., 396[S]; 690°
Morfee, T. D., 123
Morgan, E. B., 358
Morgan, M. E., 666°; 905; 1570
Morita, K., 959; 1750
Morr, C. V., 567; 673°; 674°
Morre, D. J., 51; 662°; 1577
Morris, S. M., 401[S]
Morrison, R. D., 130; 1787
Morrow, D. A., 695°
Moss, B. R., 699°; 710°; 1487
Moulick, S. K., 1148
Mudge, J. W., 680°
Muir, L. A., 1613
Muldoon, P. J., 35; 1300
Mull, L. E., 392[S]
Murdock, F. R., 640; 692°
Murley, W. R., 394[S]
Murphey, W. D., Jr., 711°
Murray, T. K., 1077
Murthy, G. K., 667°; 1666
Myers, R. M., 681°

Nagasawa, T., 289; 1550; 1651
Nakhori, C., 25; 30
Nakai, S., 25; 30; 1420
Nath, K. R., 671°; 1424
Natrajan, S., 238
Natzke, R. P., 1256
Neal, A., 675°; 1532
Neathery, M. W., 706°; 707°
Nelson, B. D., 358
Niedermeier, R. P., 685°
Nilson, K. M., 671°; 679°; 680°
Nitsan, Z., 811
Noller, C. H., 325; 783
Norman, H. D., 507; 691°; 1698; 1706; 1717; 1726; 1735
Northern, W. L., 679°

Ogden, R. V., 659°
Ogrosky, L., 393[S]; 1179
Olson, C. C., 691°
Olson, E. H., 693°; 1607
Olson, N. F., 669°; 726; 913
Olson, W. G., 689°; 698°
Oltenacu, T., 691°
O'Mahoney, J. P., 408
Orme, L. E., 704°
Ormiston, E. E., 684°
Oskarsson, M. A., 931
Ousley, T. J., 394[S]
Overcast, W. W., 393[S]
Owen, F. G., 705°
Owen, J. R., 396[S]; 398[S]
Owens, M. J., 102; 700°; 704°
Oxender, W. D., 695°

Paape, M. J., 712°; 713°; 1185
Pallansch, M. J., 173; 667°; 716°; 1396; 1557; 1660
Palmer, J. E., 631
Pankey, J. W., Jr., 711°
Panzer, C. C., 875
Park, H. S., 669°
Parkash, V., 75
Parker, R. W., 177; 536
Parry, R. M., Jr., 676°
Patel, A., 393[S]; 660°
Patel, C. C., 394[S]
Patel, M. C., 913
Patrick, T. E., 401[S]; 661°; 666°
Patt, J. A., Jr., 645
Patton, R. S., 690°

PATTON, S., 659°
PAVAMANI, I. V. P., 1420
PAYENS, T. A. J., 141
PEARSON, R. E., 581; 682°; 691°; 1123; 1602
PEELER, J. T., 1666
PELLETIER, C. A., 1487
PELLISIER, C. L., 385
PERLMUTTER, R. M., 1064
PERRY, T. W., 367; 1302
PETERS, J. W., 696°
PETERSON, A. D., 822
PETERSON, R. F., 261; 676°
PFISTER, R. M., 664°
PHILPOT, W. N., 711°
PIKE, T. L., 1330[E]
PINERO, M. A., 1093
PLANTZ, P. E., 659°
PLOWMAN, R. D., 204; 682°
POLAN, C. E., 238; 399[S]; 466; 708°; 709°; 1481
PORTER, G. H., 1327[E]
POSATI, LINDA P., 1557; 1660
POWELL, R. L., 226; 688°
PRATT, M. C., 711°
PRESTON, R. L., 1160
PRICE, W. V., 540
PRITCHARD, D. E., 995
PULLIAINEN, E., 633
PUPPIONE, D. L., 265
PURCHAS, R. W., 995
PUROHIT, V. D., 717°

QURESHI, S. R., 93

RADER, E. R., 494
RADLOFF, H. D., 692°
RAINEY, N. H., 677°
RAKES, A. H., 396[S]; 529
RAKES, J. M., 399[S]; 684°; 688°
RAMIREZ, A., 1492
RAMSEY, H. A., 704°; 705°
RAMSEY, J. B., 697°
RANDALL, W. E., 399[S]
RANDEL, P. F., 1492
RANDOLPH, H. E., 298; 659°; 674°; 677°
RAO, D. R., 686°; 689°
RAPHAEL, BARBARA C., 265; 688°; 713°
READ, R. B., JR., 177
REAVES, C. W., 1010
REAVES, J. L., 686°
REDDY, K. P., 660°
REDDY, M. S., 664°; 665°
REESE, W. H., 1328[E]
REEVES, C. B., 393[S]
REID, B. L., 983
REINBOLD, G. W., 659°; 664°; 665°; 666°; 671°
REINECCIUS, G. A., 673°; 678°; 1574
REINEKE, P. E., 664°
RHEA, U. S., 1666
RHYKERD, C. L., 325
RIBADEAU DUMAS B., 1641
RICHARDSON, D. O., 396[S]
RICHARDSON, G. H., 649
RICHARDSON, T., 726; 1388
RICHMOND, P. A., 663°
RICHTER, R. L., 673°; 678°
RINDSIG, R. B., 712°
RIVERA, E. M., 1308
ROBERTS, S. J., 183; 1256
ROBERTSON, J. B., 1305
ROBINSON, J. L., 663°
ROCHE, F. W., 694°
ROLLINS, R. E., 1506
ROSCHNIK, R. K., 756
ROUSSEAU, J. E., JR., 232; 339
ROUSSEL, J. D., 396[S]; 397[S]; 398[S]; 401[S]; 1093
RUSOFF, L. L., 397[S]; 703°
RYDER, W. L., 1290

SAACKE, R. G., 621; 633°; 1307
SABARWAL, P. K., 765
SABHARWAL, K., 277; 283
SADLER, A. M., 668°
SALISBURY, G. W., 696°
SALSBURY, R. L., 710°
SAMAGH, B. S., 19
SAMUELS, E. R., 633
SANDER, D. E., 1156
SANDINE, W. E., 661°; 668°; 1031
SANTANA, O. P., 489
SATTER, L. D., 307; 964
SAVIO, T., 700°
SAYRE, K. D., 1496
SCANLAN, R. A., 666°
SCANLON, P. F., 527; 695°
SCHAEFFER, L. R., 107
SCHANBACHER, F. L., 712°; 715°
SCHINGOETHE, D. J., 700°; 704°
SCHMIDT, G. H., 1256
SCHOPPET, E. F., 875
SCHUGEL, L. M., 703°
SCHULTZ, L. H., 58; 682°; 689°; 699°; 712°; 715°; 1428; 1447; 1454; 1511; 1513
SCHULTZE, W. D., 426; 712°
SCHWALM, J. W., 58; 1447
SCHWARTZ, D. P., 263
SCULTHORPE, A. E., 498
SEALS, R. G., 1567
SEGUIN, B. E., 695°
SEIF, S., 700°
SELTZ, C. O., 695°
SENYK, G., 647
SEXTON, T. J., 1005
SHAHANI, K. M., 660°; 675°
SHANNON, C. W., 392[S]
SHANNON, P., 614
SHAPLEY, A. E., 694°
SHARMA, K. K., 674°
SHAW, G. H., 664°
SHEHATA, T. E., 669°; 1405
SHEPARD, H. E., 679°
SHIH, C. N., 670°; 1415
SHIPE, W. F., 408; 647; 652; 753
SHIRLEY, J. E., 662°; 713°; 805
SHOOK, G. E., 58; 682°; 851
SHOVERS, J., 675°; 1532
SHUPE, J. L., 683°
SIDHU, K. S., 926
SIEWERT, K. L., 684°
SIMS, J. A., 686°; 688°
SIMS, R. P. A., 1073
SINGH, A., 677°
SINGH, R., 661°; 678°
SINGH, S., 744
SINGH, V. K., 673°; 1050
SINHA, D. P., 668°; 1508
SINNAMON, H. I., 875
SIRRY, I., 1220
SISK, L. R., 480; 484
SLACK, S. T., 694°; 695°
SLEIMAN, F. T., 702°
SMITH, A. C., 39
SMITH, A. M., 685°; 1328[E]
SMITH, E. C., 715°
SMITH, J. W., 208; 426; 454; 682°; 683°; 690°; 710°; 713°; 1113
SMITH, K. L., 345; 392[S]; 712°; 715°; 1613
SMITH, L. M., 678°
SMITH, L. W., 125; 706°; 1140; 1275
SMITH, N. E., 269
SMITH, R. C., 689°
SMITH, V. G., 1170
SMITTLE, R. B., 661°
SNIFFEN, C. J., 708°
SNIPES, M. B., 1775; 1783
SOLBERG, P., 675°
SPAHR, S. L., 684°
SPEICHER, J. A., 694°
SPECK, M. L., 661°; 670°; 1019
SPECKMAN, C. A., 668°
SPECKMAN, R. A., 665°
SPIKE, P. W., 226; 680°; 681°
SPORHAUG, TERJE, 675°
STAKE, P. E., 704°; 707°
STALLCUP, O. T., 701°
STANLEY, R. W., 959; 1750
STEELE, R. L., 1327[E]; 1328[E]
STEEVENS, B. J., 399[S]
STEIN, W. J., 1058
STERSKEY, A. K., 14
STILES, D. A., 702°
STODDARD, G. E., 687°; 692°
STOOKEY, L., 403

Stott, G. H., 1464
Stout, J. D., 130
Stroube, W. H., 805
Stroup, W. H., 177; 536; 667°
Strozinski, L. L., 1281
Stull, J. W., 983; 1499
Su-Chung, K. S., 393[S]; 1179
Sudweeks, E. M., 705°
Sullivan, R. A., 1
Suttie, J. W., 790
Sutton, C., 667°
Suzuki, T., 289
Swaisgood, H. E., 676°
Swanson, E. W., 400[S]; 699°; 1763
Swenson, P. E., 673°; 674°; 678°

Talbott, R. D., 675°
Tam, J. J., 1523
Tamsma, A., 667°
Thapon, J. L., 1641
Thatcher, W. W., 400[S]; 697°; 700°; 1165
Thomas, G. D., 700°
Thomas, J. N., 401[S]
Thomas, J. W., 83; 664°; 689°; 693°; 703°; 1261
Thompson, G. B., 1160
Thompson, J. N., 1077
Thompson, M. P., 661°
Thompson, P. D., 713°
Thompson, Yvonne, 200
Thomson, G. M., 840
Thye, F. W., 399[S]
Timmen, H., 919
Tinnimitt, Y. P., 703°; 1261
Tobias, J., 759
Toma, S. J., 30
Toman, F. R., 805
Tomaszewski, M. A., 682°
Torres, F., 1305
Townend, R. E., 261; 674°
Tracy, J. D., 715°
Traub, D. A., 348
Trenkle, A., 1200
Trout, G. M., 887
Trowbridge, Carolyn L., 681°
True, L. C., 392[S]; 394[S]
Tucker, H. A., 664°; 995
Tung, S., 1329[E]
Turner, L. G., 667°; 678°
Tyler, W. J., 682°; 690°
Tyrrell, H. F., 318; 480; 685°; 686°; 945; 1106

Ulberg, L. C., 401[S]; 598
Urban, W. E., Jr., 701°; 1327[E]; 1757

Vahora, G. Y., 671°
Vakaleris, D. G., 277; 283; 665°
Valencia, I., 1492
Valeris, D., 674°
Vandersall, J. H., 707°; 710°; 931
Van Keuren, R. W., 702°
Van Soest, P. J., 1275; 1305; 1496
Van Vleck, L. D., 183; 214; 218; 1148; 1698; 1706; 1717; 1726
Vaughan, D. A., 1081
Vaughan, K., 396[S]
Vedamuthu, E. R., 668°; 1031
Verdaris, J. N., 1329[E]
Verde, O. G., 631; 1010
Vestal, J. H., 1331[E]
Vik-Mo, L., 711°
Vincent, C. K., 400[S]
Vinson, W. E., 691°; 1621
Voelker, H. H., 102; 700°
Voilleque, P. G., 1487
Volcani, R., 811; 1544

Wadell, L. H., 1517
Waldern, D. E., 93
Waldo, D. R., 125; 687°; 1275
Walker, C. K., 474
Walker, H. W., 394[S]; 693°; 1741
Wallenius, R. W., 93; 692°; 702°
Wallentine, M. V., 989
Walter, H. E., 1331[E]
Wangsness, P. J., 1432; 1439
Ward, G., 334; 768; 1428
Warner, R. G., 694°; 695°
Washam, C. J., 671°
Waterman, R., 58; 698°; 699°; 1447; 1454; 1511; 1513
Waters, W. H., 398[S]; 703°
Wayne, R. W., 680°
Weetall, H. H., 647
Wegner, T. N., 642; 1464
Weigand, E., 589
Welch, J. G., 685°; 1328[E]
Welles, M. E., 1174
Wellmeyer, E. K., 668°
Westhoff, D. C., 661°; 671°; 865
Weyant, J. R., 716°; 1597
Whitaker, J. R., 719; 1523
White, J. M., 395[S]; 1502
Whiting, F. M., 983; 1499
Whorton, E. B., 680°
Wilcox, C. J., 395[S]; 631; 697°; 700°; 1010; 1165
Willard, T. R., 704°
Willes, R. F., 1188
Willett, L. B., 65
Williams, Karla, 417
Williams, W. F., 698°; 1330[E]
Wilton, A. W., 829
Wilton, J. W., 183; 716°; 717°
Wiltrout, D. W., 307
Wiersma, F., 694°
Wierzbicki, L. E., 670°
Wing, J. M., 686°; 687°
Whippler, J. P., 699°
Witaszek, P., 705°
Wohlt, J. E., 708°
Wolfe, S. A., 783
Womack, Madelyn, 1081
Wondolowski, V., 678°
Wong, N. P., 1331[E]
Wood, A. S., 439; 446
Woodward, R. S., 704°
Wordinger, R. J., 697°
Worsham, G. H., 667°
Wrenn, T. R., 204; 678°; 714°; 716°; 1597
Wright, E. E., 680°; 681°

Yang, C. S., 1570
Yao, Y. T., 446
Yoncoskie, R. A., 204; 677°
Yoo, B. W., 671°
York, J. O., 701°
Young, C. W., 691°
Young, J. W., 589; 1097
Yver, D. R., 1330[E]

Zarkower, A., 645
Zehnder, H., 403
Ziegler, W. J., 302
Zikakis, J. P., 1329[E]; 1506
Zindel, H. C., 1261

SUBJECT INDEX OF PAPERS PUBLISHED IN VOLUME 55 OF THE JOURNAL AND OF ABSTRACTS OF PAPERS PRESENTED AT THE ANNUAL* MEETING, THE SOUTHERN[S] DIVISIONAL MEETING, AND THE EASTERN[E] DIVISIONAL MEETING OF THE AMERICAN DAIRY SCIENCE ASSOCIATION

AFLATOXIN
sodium chloride production stimulator, 670*
American Dairy Science Association
annual meeting, 1334
association heritage, 887
awards, 1338, 1346
call for papers, 139, 1333, 1521, 1639
invitation to annual meeting, 137
nominations, 543, 1522, 1640
officers, committees etc, 1363
presidential address, 1336
program. 67th annual meeting, 547
student articular, 891, 1797
Antibiotics
Propionibacterium resistance, 665*
mechanism, 665*
calves, antibiotics in rations, 703*
Antioxidants
kinin suppression, 1558,
Artificial Insemination
bull selection, 1621
estimators, intrasire regression coefficient, 849
herd variances, 849
production variances, 848
Midwest Breeders Cooperative Program, 840
heritabilities, 842
phenotypic correlations, 840
type ratings, 841
progeny testing progress, 829
milk yield gains, 832, 833, 834, 836
selection, mates of sires, 851
Predicted Differences, 853
semen price, 854
stud population, sire sampling, 716*

BACTERIOLOGY
Alcaligenes viscolactis, growth inhibition, 393, 1170
B. cereus, heat activation, 669*
Bacillus species, heat resistance, 1405
biosynthesis of flavor compounds, 1022
acetoin, 1024
reduction, 1025
aeration, 1027
diacetyl, 1022, 1025
pH, 1027
pyruvate, 1023
utilization, 1024
Camembert cheese, *E. coli* activity, 669*
Endothia parasitica protease, casein hydrolysis, 1523
Geotrichum candidum, proteolysis, 666*
Lactobacillus, colibacillosis control, 661*
Lactobacillus plantarum, 8
acetylesterase, 9
Lactobacillus species, malty aroma, 666*
L. helveticus, low-lactose milk, 670*
L. bulgaricus, storage stability, 661*
Mucor pusillus protease, casein hydrolysis, 1523
propionibacteria and carbon dioxide, 666*
lysozyme sensitivity, 659*
Pseudomonas fluorescens, adsorption 668*
Pseudomonas taetrolens, musty aroma, 666*
psychrotropic sporeformers, 669*
Saccharomyces fragilis, lactose fermentation, 671*
Salmonella newbrunswick, 14
survivors, 16
Salmonella typhimurium activity, 669*
S. aureus, growth in butter, 670*
staphylococci, salmonellae, inhibited by streptococci, 670*
inhibition by aldehydes, milk volatiles, 670*
Staphylococcus, hemolytic, 189
S. agalactiae, 189
S. diacetilactis, citrate conc, 665*
S. lactis, survival, 865
curves, 866
S. uberis, characteristics, 194
Bacteriophage
c1 infection, *S. cremoris* C1, 664*
S. thermophilus, plaque formation, 664*
testing procedures, 664*
Blood
arsenic-fed cows, 706*
butanediol feeding, ketone, glucose, 1102
butyrate and ketones, 591
calves, amino acids, 351
diet and glucose, 442
fatty acids, 927
and diet, 96, 97
glucose, carbon acids transfer, 312
mammary gland changes, 59, 60
methemoglobin, 641
neutrophil estimations, 712*
oxytocin activity, 77
plasma lipid fractions, 450, 451
protein, 710*
Sephadex failure to lower lipids, 1597
serum protein, 1093
season, 1094
temp-season relationships, 1093
urea, 472
Blue Cheese
benzoyl peroxide, 672*
carbohydrate metabolism, 1
Book Reviews
carcinogenesis, J. Simon, 139
cattle science, E.E. Ormiston, 1332
food processing, A.I. Nelson, 139
respiration and circulation, B.L. Larson, 1332
Brick Cheese
carbohydrate metabolism, 5
Breeding
conception rate, 390
efficiency, 335, 386
first-service conception, 336
interval, 387
low fertility costs, 385

milk fever, 389
placenta retained, 388
problems and consequences, 385
Brown Swiss
cross breeds, growth rate, 113
weight-age, 399[S]
Bulls
comparisons with daughters, 226
evaluations, 230
daughters tested per young bull, 835
selection, 1621
daughter superiority, 215
for use, 691*
sire comparison, 215
semen characteristics, 1632
reproductive organ weights, 1633
Butter
copper analysis, 750
atomic absorption, spectroscopy, 751
fluorometric vitamen A analysis, 1077
Staphylococcus aureus growth in cream and butter, 670*
survival, 1412

CALVES
absorption from small intestine, 1432
^{14}C-glucose absorption, 1435
recovery, 1437
portal-arterial, portal blood flow, 1434
antibiotics in rations, 703*
blood amino acids, 351
plasma urea, 819
brachygnathia, 525, 526
brain weights, 342
butyrate to ketones, 592
carbohydrate utilization, 243
cerebrospinal fluid absorption, 341
pressure, 235, 1636
chitinous-fed products, 690*
energy intakes and weight gains, 346
fat rations, highly unsaturated, 716*
feeding behavior, using pentobarbital, 822
feed intake, 824, 825, 826
first born, pesticide residues, 1499
DDT and metabolites in tissues, 1500
dams blood, milk, 1500
gamma globulin absorption, 646
growth and feed intake, 350
responses, 504
ingredients, high-fiber, 705*
intakes and weight gains, 346
intervals, 334
iodine intake and growth, 933
methionine sources, 704*
milk replacers, 811
digestibility, 817, 818
weight and energy use, 816, 818
muscular hypercellularity, 501
mineralization, 503
myopathy, 500
nitrogen metabolism, 1281
caloric intake, 1281
fecal output, 1285
nitrogen, 1287
protein, dry matter digestibilities, 1286
regressions, coefficients, variability, 1284
nonfat milk diets, 345
once-a-day versus twice-a-day feeding, 703*, 704*
quality and quantity, 704*
portal blood flow by dye-dilution, 1439
catheter design, 1440
dye injection route, duodenal, mesenteric, or ruminal vein, 1444
protein sources and amounts, 703*
to energy ratios, 349
in replacers, 703*
in starters, 704*
rapeseed, sunflower, soybean meal supplements, 704*
ration, high soybean meal, 933
ruminoreticulum metabolism, 589
rumen metabolism, 818
soy flour, hydrogen chloride-treated, 704*
fully cooked, 705*
chlortetracycline, 705*
soybean replacers, 811
weight, energy and protein use, 815
starch utilization, 242
veal production rations, 990, 992
vitamin E deficiency, 498
A minimum, 234
intake, 235
whey feeding, 1330[E]
Camembert Cheese
E. coli activity, 669*
Carbohydrates
calves, reducing sugars, 241, 242
glucose specific activity, 309
synthesis, 307, 314
metabolism, 1
Caseins
alpha- hydrolysis by proteases. 1523
rates vs. time, 1526
extent, 1530
initially, 1529
canine, 1553
electrophoretic patterns, 1546
ewe's 673*
fractionation, 26
percent, 903
secretion, 201
beta-, fragments, 262
ewe's, 673*
fractionation, 32
hydrolysis by proteases, 1523
mole weight, 674*
secretion, 201
synthesis, 630, 1041
gamma-, amino acids released, 1046
biosynthesis, 1041
composition, 1043
ewe's, 673*
identification, 261
mole weight, 674*, 1042
peptide pattern digest, 1045, 1046
percent, 903
pH, 659*
variants, A^1, A^3, 1041
kappa-, hydrolysis by proteases, 1523
rates vs. time, 1526
ewe's, 673*
polymorphs, 673*
fractionation, 26
percent, 903
R-, S-, identification, 261
mole weight, 674*
carboxymethylcellulose interaction, 674*
casein, isoelectric, 897
analysis and preparation, 4
methods, 801
electropherograms, 902
%, 903
densitometric tracings, 890
caseinate stabilizers, 280
isoelectric focusing, 1535
gel patterns, gamma-, 1538
kappa-, 1539
whole-, 1537
isoelectric points, alpha-, beta-, kappa-, 1541
starch-gel electrophoretic patterns, 1536

human, casein patterns, 201
mastitis influence, 674*
micelle properties, 674*
whey protein denaturation, 766
Cheddar Cheese
astringent flavor fraction, 735
absorption spectra, 740
amino acids, 739
electrophoretic separation, 737, 739
extractability, 743
gel filtration, 737
sedimentation pattern, 738
carbohydrate metabolism, 1
caseinolytic *Micrococcus* species, 1424
electrophoretic patterns, casein fractions, 1425
residues, 1426
bacterial counts, 1425
carbonyls, 660*
chromatographic volatile fat profile, 1071
flavor defects, causes and control, 1031
fluorometric vitamin A analysis, 1077
LFE Bioenhancer, 671*
low-fat, 660*
polyunsaturated fatty acids increase, 1331E
underwater cheddaring, 672*
Cheese
direct acidified curd, 744
electrophoretic patterns, 748
flavor 746
pH, 747
sulfhydryl, 747
preservatives, pickled cheese, 1220
Colby Cheese
carbohydrate metabolism, 5
Computer Program
least cost ration formulation, 1741
all nutrient factors, 1748
body weight and protein, 1742
crude fiber and energy, 1744
crude protein, net energy, Ca, and P constants, 1743
nutrient specifications, 1748
productivity and energy balance, 1746
maximizing income over feed cost, 1607
Concentrates
buffered, for cows, 131
concentrates: fatty acids, 959
high-moisture corn, 269
pelleting without steaming, 1750
composition, 1751
intake and body weight, 1752
production, 1752
volatile fatty acids, 1752
milk fat, 1753
polyethylene pellets, all-concentrates, 1787
feed intake. 1789
response, 1788
Cottage Cheese
culture creaming, 1029
direct acidification, 671*
flavor defects, causes and control, 1034
improvement, 1029
iron-fortified, 668*
Pseudomonas fluorescens adsorption, 668*
quality, 393S
dressing, 393S
whey, food ingredient, 661*
spray-dried, 667*
Cream
copper content, 760
Staphylococcus aureus, 1410
cream, buttermilk, butter, wash water, 1413
growth, 1412
inhibitor, 1412
survival, whipped butter, 1412
Cultured Milk
astringent, bitter, flavor, 742
extractability, 743
pH, 743
flavor intensification, 1028
frozen cultures, 1028

DARIWORLD CHEESE
process, 540
Dairy Cattle
abomasal feeding casein, gelatin, whey, 709*, 711*
N flow, 710*
acetate, propionate, intraruminally infused, 1757
adrenocorticotropin intravenous injections, 1165
alfalfa, cubed, 692*
ammonia addition to silage, 709*
baled hay vs. cubed, 692*
bulls, nitrogen metabolism, 1281
calcium, phosphorus, absorption, 707*
intake, 768
supplemented, 245
vitamin D, 772
calving intervals, 336
cannulas, permanently installed, 1188
catheters and shunts implanted, 1191
concentrates, high-low, energy value, 1106
buffered, fatty acids, 959
corn, dry vs. high moisture, 269, 1475
intake, 270
culling and production 1329E
dietary iodine, thyroxine secretion, 1763
energy expenditure, 257
estrogen, progesterone, feed intake, 1613
needs, 712*
exteroceptive response to milking, 1172
fasting, energy expenditures, 259
feed consumption variations, 454
cost, maximizing income, 1607
fenthion: feces, milk, urine, 779
fiber low, digestibility, 1266
Flumethazone treatment, 700*
fluoride, high and low, 790
forages, heat-damaged, 1276
concentrate ratio, 763
glucose oxidation, initiation, 712*
synthesis, 307
heifers, progestin feeding, 995
hornflies response, 700*
immunoglobulins, 150
iodine intake, production, 931
lactation-in-progress, extended, 1602
modified regression, 1604
multiple regression estimates, 1600
ratios, 1603
regression estimates, 1605
lactation summer performance, 1133
Leptaden feeding, 104, 105
magnesium absorption, 707*
mammary gland metabolism, 1085
mastitis control program, 1256
dry period therapy, 1683
methionine analog conversion, 353, 460
supplemental, 983
milk flow, quarters, 1692
weights to nearest pound, 1517
mineral interrelationships, a review, 935

free choice, 251
mustard meal, protein source, 710*
mycotoxins in feeds, 1243
net energy: definitions, relationships, 945
nitrate utilization, 641
nitrogen utilization, 707*
L-norespinephrine mobilized fatty acids, 926
organophosphorus insecticides, 777
part- and whole-lactation feed efficiency, 1113
herdmate estimates, 1133
pelleting concentrates, 1750
polyethylene pellets, all-concentrates, 1787
poultry waste feeding, 1262
predicted growth, production, 688*
pregnancy, energy, 481
production, body weight, 326
protein, abomasal infusions, 708*
blood serum, 710*
dietary, 710*
high and low, 319
purified, solubility, 708*
rations cubed, 692*
least cost formulations, 1741
optima, 484
record standardization, 581
reticulum pressure, 1156
roughage restricted, high grain, 1481
rumen microbial protein synthesis, 971
safflower oil, daily vs. alternate days, 712*
formaldehyde-treated, 205, 678*
Sephadex, lower lipids, 1597
serum amino acids, 709*, 709*
phosphatase, 1329E
silage, ammonia-treated, 489
sodium sulfate and calcium, 710*
sorghum grain, reconstituted, 979
soybeans, roasted, 529
sudangrass, iodine metabolism, 1487
sugarcane bagasse, alkali-treated, 1492
formula composition, 1493
milk: fat-corrected, fat, solids-not-fat, total solids production, 1494
teat dip efficiency, 426
triticale feeding, 687*
type appraisal; age, stage of lactation, 1706
first lactation, lifetime, 1726
herd disposals, 1698
herd, sires, years, 1717
thyroprotein response, 664*, 689*
urea administration, concentrate intake, 1470
body weight, feed intake, reproduction, 809, 1290
corn silage, 805
utilization, 466
vitamin B_{12} trends, 476

Dairy Herd
culling, 1698
mastitis control program, 1256
profitability, 691*

Dairy Herd Improvement Association
computer ration formulation, 680*
Florida, genetic trends, 1010
lifetime income, AI sires, 680*
maximizing income over feed cost, 1607
Michigan: background, training, dairy farm quality, 680*
sire selection, 681*
milk weights, nearest pound, 1517
statistics, 1518, 1519
yield estimates, 211
operation manual, training, records, 680*
sample containers, single service, 679*
technical committee report, 690*

Dairy Industry
nutritional research opportunities, 1323

Dairy Records
maximizing income over feed cost, 1607
progeny tested young bulls, 716*
stud population, sire sampling, 716*
technical committee report, 690*

Deshi Cattle
calving age, 1150
interval, days open, 1152
lactation length, 1150
production, 1154

Drugs
phenobarbital metabolism, 706*
sulfadimethoxine: blood, milk, urine, 705*

Dry Whole Milk (Foam)
agglomerate breakdown, 174
continuous vacuum, commercially, 875
drying zone, 876
heat transfer, 878
process flow, 877
production rate, 878
structure, casein, lactose, 176

EDAM CHEESE
carbohydrate metabolism, 5

Enterotoxins
A, cream, buttermilk, butter, wash water, 1413
E. coli, 669*
disc assay, 665*

Enzymes
acetylesterase, 9
alpha-, beta-, kappa-caseins hydrolysis by animal and bacterial proteases, 1523
rates vs. time, 1525-1528
extent, 1530
initially, 1529
amylases, biochemical characersitics, 681*
coenzymes, 1
deoxyribose, 4
dipeptidase activities, 675*
lipase activity and flavor, 676*
lipoprotein, 676*
lipolysis test, 1420
lysozyme purification, 676*
mammary gland, coenzyme A, 663*
milk clotters, electrophoretic analysis, 675*, 1532
Enterobacter species, 675*
Enterobacter liquefaciens, 675*
milk protease purification, 676*
5'nucleotidase, nucleotide pyrophosphatase and alkaline phosphatase activities, 659*
porcine, rennin-pepsin blends, 294
pH, 295, 296
pepsin, insoluble, 726
activity loss, 730
coagulation phases, 728
pH, 728
stability, 728
protease, *Endothia parasitica*, 719
concentration, 722
pH, 35
trypsinogen activation, 721
pyrimidine synthesis, 663*
rennin and pepsin determinations, 1641
chromatographies, aboma-

sal juices, 1648
commercial rennets, 1647, 1648
crystalline rennin, 1644
pepsin, rennin, 1643
swine rennin, 1644
sulfhydryl oxidase purification, 676*
trypsin, oxidation inhibitor, 648, 735
Extension Education
film, parturition, 679*
telelecture versus in-person lectures, 679*

FATTY ACIDS
blood, nutrition plane, 714*
composition, 87
interconversion, 310
free and total, 714*
1-^{14}C-Hexanoic acid for synthesis, 1182
metabolism, adipose tissue, 86
milk composition, 167
rumen, 442, 487
Forages
alfalfa, estrogenic activity, 81
chemical preservation, high-moisture, 701*
Coastal bermudagrass, 703*
digestion coefficients: alfalfa, bahiagrass, bermudagrass, ryegrass, corn silage, 360
digestibility in vitro, 362
energy, 1327E
evaluation, with prairie voles, 702*
haycrop silage or hay, 701*
heat-damaged, nitrogen digestibility, 1275
regressions, acid-detergent N, 1277
digestible N, 1277
forage fractions, 1276
pepsin insoluble N, 1277
total digestible N, 1279
intake and rumination, 1328E
long-chained, diet, 99
polyunsaturated, 205
protein, 1327E
high, top grazing, 702*
quality estimations, 358
ruminal fluid cell-wall digestibilities, 1140
cell wall, composition, 1142
indigestibilities, 1145
lignin: dry matter, 1147
lignin-cellulose ratios, 1144, 1147
rates, 1141, 1143
rye silage with organic acids, 702*
sorghum-sudan hybrid, 701*
grain, high moisture, 701*
whey-treated alfalfa-brome haylage, 700*
Food Emulsions
calcium-phosphate retention, 286
caseinate stabilizers, 281
citrate conc, 284
electrolyte conc, 279
hydrophylic-lipophilic-balance, 278
phosphatete conc, 285
protein solubility, 287
stabilizer interactions, 283

GENETICS
age adjustment: month, year, and herd 683*
parity, 716*
age, female culling, 691*
amylases, characteristics 681*
body weights: yield, intake, feed efficiency, 683*
body correlations, eight, 684*
and production traits, 684*
brachygnathia, calf, 525
breeding value estimates, 691*
Brown Swiss, growth rates, 684*
bull selection, 1621
parameters, phenotypic, genetic, economic, 1623
selection differentials, 1627
disposal, 1627
efficiency, 1628
optimum, 1628
son-parent regression, 1625
traits measured, dams, sires, sons, 1624-1625
sons, 1624-1625
controlled population, 681*
crossbreeding, linebreeding, outcrossing, 682*, 682*
performance, 113
culling extent, productive merit, 683*
daughter, herdmate regression, 1735
predicted differences, 1st lact, 1736, 2nd lact, 1738
five breeds, 1738
daughter superiority, 215, 216
environment and production, 107
estimators, intrasire regression coefficient, 849
herd variances, 849
milk production variances, 848
genetic factors, 187
feed consumption variations, 454
daughter traits, 455
correlations: phenotypes, 456
other traits, 457
heritability, 456
herdmate comparison, modified, 691*
heritability conflicts, 507
intraherd variances, 511, 512, 513
estimates, 515
paternal half-sister correlations, 512
heritability estimates, binominally, 218
generation predictions, 221, 222, 223
half-sib correlations, 220
mass selections, 221
heritability, discrete distributions, 682*
inheritance, limber legs, 683*
lactations-in-progress extended, 1602
modified regression, 1604
multiple regression estimates, 1600
ratios, 1603
regression estimates, 1605
Midwest Breeders Cooperative Program, 840
heritabilities, 842
phenotypic correlations, 840
type ratings, 841
milk production trends, 631, 1010
genetic, environmental, 1011
Guernseys, Holsteins, Jerseys, 1011
part- and whole-lactation, herdmate estimates, 1123
lactation complete, 1128, 1129
milk and fat covariances, 1125, 1126, 1127
part- and whole-lactation, feed efficiencies, 1113
correlations, 1115
phenotypic, 1116, 1117
fat-corrected milk, 1114
heritabilities, 1118, 1119
net energy, 1115
pedigree correlations, breeding value, 691*
phenotypes, economics, and milk yields, 690*
sow whey, 232
polymorphism, 331
progeny testing progress, 829
milk yield gains, 832, 833, 834, 836

record standardization, 581
relationships: milking rates, udder height, 682*
selection, mates of sires, 851
average, high production, 682*
predicted differences, 853
semen price, 854
size, shape, and production, 684*
trait types combined, 717*
trend estimators, 688*
type appraisal, 1706
age and lactation, 1711
appraisal constants, 1709
traits, original and renamed, 1712
variation source, 1708
type appraisal, first lactation, lifetime, 1726
correlations, genetic, 1732
lifetime, 1729
phenotypic, 1728
regresssions, 1st lactation, 1730
type appraisal, herds, sires, years, 1698, 1717
heritabilities, 1st lactation, 1720
production, 1722
pooled traits, variations, 1719
type repeatabilities, 1723
udder traits, 495
Goat
anesthetic, metabolite injections, 611
feed intake, rumen metabolite, 608
mammary amino acid incorporation, 677*
metabolite and anesthetics, 609
mineral balance, 698*
taste and feed intake, anesthetically, 1461
basal diet plus HCl, 1462
without Carbocaine, 1462
Grains
acetic acid preservative, 330
blighted corn, 1302
composition and digestibility, 1303
sorghum reconstitution, 329
volatile fatty acids, 329
Guernsey Breed
weight-age, 399s
Guinea Pig
Ce-141, C-14- polyethylene glycol, milk 1775
Ce dose, milk content, 1777
isotope distribution, 1777
recovered dosage, 1780
total volume, 1780
mammary gland infection, 867
alpha-, beta, hemolytic *Streptococcus*, 868
milked glands, 1785
movement, 4 sulfa-drugs, uterine membrane, 705*
secretory, nonsecretory tissue, 1785
tissue composition, 1783

HEIFERS
all-in-one rations, 693*
corn, roasted 367
intakes and weights, 369
consumption and weights, 369
heat exposure, restricted water, 700*
mammary development, 495
progestin (Melengestrol Acetate) feeding, 995
fertility, 1002
growth, first estrus, 997, 998
luteal hormone, 1000
mammary development, 998
measurements, ovarian, 1000
uterine, 1000
pituitary and plasma prolactin, 1000
soybeans, roasted, 708*
Herb Drugs
Leptaden feeding, 104, 105
Holstein Breed
age, weight, 399s
cross breeds, growth rate, 113
production, 107
days dry, days open, 108, 109
lipoproteins, low density, 265
mammary development, 496
protein-energy-ratio, 348
type appraisal program 1810
weight-age, 399s
Hormones
adrenocorticotropin intravenous injections, 1165
elution patterns: corticosterone, cortisol, 1166
progesterone and 20-beta-hydroxypregn-4-en-3-one, 1166
plasma cortisol, corticosterone and progesterone, 1167
alfalfa, estrogenic activity, 81
corticoid response to milking, 1170
corticotropin, blood composition, 1464
corticoids, leukocytles, 1465, 1466, 1467
minerals, 1465
potassium, sodium, 1467
dietary iodine and thyroxine secretion, 1763
estrogen, progesterone and feed intake, 1613
calcium intake, 1615
dry matter intake, 1615
hormone injection, 1614
urinary hydroxyproline, 1616
oxytocin activity, 77
milk flow, 1692
protein changes, 201
plasma corticosteroid variations, 1972
concentrations, nonpregnant cows, 1793
pregnant lactating cows, 1793
radioimmunoassay, 1200
prolactin release, 664*
steroid isolations, 70
thyroid activities, 482*
secretion rates, 698*
status, digestive tact, 699*
thyrotropin turnover, 700*
thyroxine, disappearance, 699*
secretion rates, 699*
serum, 664*
urine metabolites, 68
Human Milk
colostrum and milk lactoferrin, 1651
immunodiffusion, amounts, 1653, 1654
patterns 1652
lactation stag, 1656
nitrogen distribution, 1654, 1655
whey proteins, 1554
nitrogen distribution, 290
whole casein, 1552
Hydrocolloids
analysis, 48
carboxymethylcellulose analysis, 44
chromotropic acid, 42
carrageenan determination, 1675
absorption spectra, 1679
color intensity, 1678
ester sulfate, 1677
ortho tolidine-NaOCl, 1675
reactions, 1676
recovery, 1680
carrageenan, protein reactivity, 141
emulsifiers, milk stability, 678*
emulsion stability, 283

polysaccharides, protein reactivity, 141
Hydrogen Peroxide
bacteria, control, 661*
protein denaturation, 367
concentration, time, temp, 369
electrophoretic patterns, 569
protein concentration, 570

IMMUNOGLOBULINS
analysis, 157, 159
beta-lactoglobulins, immunogenic properties, 1058
anaphylactic reaction, 1060
sensitizing dosage, 1061
calculations, 1060
medium, 1061
bovine, preparation, 152, 153
colostrum, isoelectric focusing, 1051
absorbance profiles, 1054
electrophoretic patterns, 1053, 1055
pH gradients, 1052
electrophoretic analysis, 673*
gamma globulin absorption, 646
gel isoelectric focusing, 1509
fractions IgG1, IgG2, IgM, 1509
immunoreactivity, prolactin, 715*
lysozyme immunochemical reactions, 675*
Insecticides
organophosphorus, 777

JERSEY BREED
calves, nonfat milk diets, 345
energy, 346
weight gains, 346
production trends, 632
weight-age, 399[S]

KETOSIS
amino acids in plasma, 1768
amino acids initially, plasma, 1770
induced ketosis, 1772
low-energy + thyroxine, 1769
nicotinic acid treatment, 698, 1447, 1454
administration, 1448
blood metabolites, 1511
composition, long-chain fatty acids, 1454
cholesterol, 1457
milk fat, 1458
nonesterified fatty acids, 1456
phospholipids, 1457
triglycerides, 1455
variances, 1457
methionine hydroxy analog treatment, 1513
normal, ketosis, metabolites, plasma lipids, production, 1444

LACTOSE
determination, 678*
Lactation
abomasal feeding: casein, gelatin, whey, 689*, 709*, 710*, 711*
nitrogen flow, 710*
acetate-stearate, radioactivity, 1481
chromatographic analysis, liver, serum lipids, 1484
radioactivity, adipose, liver tissue, 1483
milk fat, 1483
polar, neutral lipids, 1484
serum lipids, 1483
age-season correction factors, 585, 586
barley or corn, 685*
Canadian Holstein Record of Performance, 432
first, 432
freshening age, 434
yield traits, 436
variances, 437
calcium, sodium sulfate, 710*
concentrates, high-low, energy value, 1106
animal performance, 1107
composition, 1107
digestibility, 1108
energy balance, 1109
milk yield, 1107
metabolizable energy, 1107
concentrates, buffered: fatty acids, 959
feed intake, 961
milk fat acids, 962
performance, 960
rumen fatty acids, pH, 901
corn vs. high moisture, 1475
body weight, efficiency, intake, 1476
digestibility, 1477
milk, fat production, 1478
rumen fatty acids, 1478
culling, production, 1329[E]
diet, blood fatty acids, 97
estrogen, progesterone, feed intake, 1613
needs, 712*
feeding ad libitum, performance, 685*
glucose oxidation, lactation initiation, 712*
synthesis, 307
income over feed cost maximization, 1607
iodine intake, thyroxine secretion, 1763
feed consumption, 1765
milk, fat production, 1766
plasma, 1763, 1765
production, 932
intraruminally infused acetate, propionate, 1757
fatty acid infusions, energy, 1759
energy efficiency, 1760
rumen fluid, 1760
intake, digestibility, production, 1759
lactations in progress, 1602
modified regression, 1604
multiple regression estimates, 1600, 1605
ratios, 1603
lipoproteins, 713*
methionine supplemented, 711*
milk yield estimates, 211
first lactation, 496
partial, 210
flow variations, 690*
mineral interrelationships, review, 935
mustard meal, protein source, 710*
net energy: definitions, relationships, units, 945
energy balance, net energy, 946
digestible, 950, 955
intake, 948, 949
metabolizable, 948, 949, 951, 952
total, 952
norepinephrine mobilized fatty acids, 926
part- and whole-lactation feed efficiency, 1113
herdmates, 1123
performance prediction, 582, 691*
phenobarbital metabolism, 706*
production curve, 583
production, summer, 1133
correlations: feed intake, weather, 1136
fat, weather, 1139
feed intake, body wt, milk, fat, 1135
milk, weather, 1137
protein, blood serum, 710*
dietary, 710*
high and low, 319
SNF quotients, 1329[E]
rations complete, 325
ruminal fermentation altera-

tions, 964
bentonite, 968
intraruminally infused carbonate, 966
ingesta, rumen, 967
phosphoric acid infusion, 967
volatile fatty acids, 966
safflower oil, daily vs. alternate days, 712*
serum amino acids, 709*
sudangrass, iodine metabolism, 1487
excretion, 1488
feces, 1490
plasma, 1489
urine, 1490
sugarcane bagasse, alkali-treated, 1492
milk: fat-corrected, fat, solids-not-fat, total solids 1494
type appraisal, age, lactation, 1706
udder infections, 180
USDA correction factors, 584
urea administration, concentrate intake, 1470
blood ammonia, urea, 1471
feed intakes, 1472
milk production, 1472
ration composition, 1471
Lactoglobulins
beta, ewe's milk, 673*
beta-, immunogenic properties, 1058
synthesis, 630
bovine milk typing, 1507
skimmilk electropherogram, 1507
hydrogen peroxide effects, 1064
amino acids, 1006
heat, 1066
methionine, 1065
-SH,-S-S- groups, 1065
interactions, 674*
Lactose
alcoholic fermentation, 671*
crystallization, 668*
structure, 176
surface area, crystal form, hydration, 1396
alpha-, hydration stage, 1397
N adsorbed-desorbed isotherms, 1398
rehydration, 1398
synthesis, 663*
Lambs
corn, roasted, 367
intakes, weights, 370
Limburger Cheese
Geotrichum candidum, 666*
Lipids
Bacteroides ruminicola, composition, 677*
blood plasma, diet, 97
composition, mastitis, 677*
fatty acids, diet, 96, 97
fat globule composition, 171
1- ^{14}C-Hexanoic acid, lipid synthesis, 1181
nicotinic acid treatment, 698*
Sephadex, lower lipids, 1597
blood plasma lipids, 1599
feed fat intake, 1598
squaline content, 170
volatiles, 1069
Cheddar cheese, 1071
corn oil, 1070
cottonseed oil, 1070
foods, 1071
Lipoproteins
blood, low-density, 266
electrophoretic distribution, 265
gestation, lactation, 688*, 713*
high-low density fractions, 412
hydrolysis, 408
lipase, 662*
activity, 686*
insulin, glucose, 689*
phospholipase c, 410
phospholipids, initially, 411

MAMMARY GLAND

adrenalin, oxytocin injections, 713*
amino acid incorporation, 677*
beta-casein synthesis, 630
beta-lactoglobulin synthesis, 630
blood components, 61
coenzyme A desaturase, microsomes, 663*
colostrun immunoglobulins, 1051
Corynebacterium bovis infection, 413
growth, 416
numbers, 415
gangliosides, 662*
heifers' development, 495
1-^{14}C-hexanoic acid, fatty acid synthesis, 1182
hydroxy compounds, 923
immunoglobulins, 1051
infection resistance, 187
surveys, 184
insulin, response to, 713*
intrammary pressure, 713*
lactose, indicator, blood flow, 713*
synthesis, 663*
lipid composition, 55
lipogenesis, 662*
lipoprotein lipase activity, 662*, 712*
membrane globule, 1013
glycosidase activity, 1013
hydrolase, transferase activities, 1014
pH, 1015
UDP glucose hydrolysis, 1014
Golgi apparatus isolation, 1577
amino acids, 1592
composition, 1588
enzymatic activity, 1580
fatty acids, polar lipids, 1590
major lipids, 1590
interrelationships, 1594
endoplasmic reticulum, 1594
plasma membrane, 1594
secretory vesicles, 1594
neutral lipids, 1589
phospholipids, 1589
protein electrophoretic patterns, 1591
metabolism of tissue, 1085
radioacetate lipids, 1086, 1087
radiostearate, lipids, 1065
radiogaschromatograms, fatty acids, 1088
tissue compartments, 1089
milk flow, quarters, 1692
milking interval, 713*
nucleic acid, pigs, 1295
plasma membranes, 862
nucleotidase activity, 863
prolactin, response to, 713*
rat cell micrographs, 624
radioactivity distribution, 625
rat gland involution, 1186
serum triglyceride uptake, 87
tissue structure, 663*
Management
automated feeding, 693*
calving, months, seasons, 395[8]
cattle reproduction, 598
classification and lifetime production, 396[8]
computerized least cost ration, 693*
dairy farm operation, 395[8]
Florida, 395[8]
dairy outlook, 533
evaporative cooling cows, 694*
maximizing income, 693*

milk parlor, double 8 herringbones, 695*
flush system cleaning, 695*
narrow-, medium-bore teat cups, 694*
personnel, large dairies, 694*
postmilking teat dips, 426
productive herd life, 396[s]
system, rearing herd replacements, 694*
progress, 695*
Virginia mastitis program, 395[s]
Market Programs
Finland's policies, 990
implications for U.S., 882
Mastitis
abnormal milk, detected electronically, 711*
chlorhexidine teat dip, 428
control program, 1256
infection, 1259, 1260
noninfection vs. infection, 1258
production changes, 1257, 1259
Corynebacterium bovis infections, 1016
invaders: streptococci, hemolytic and nonhemolytic staphylococci, 1017
curd stregnth, 299
factors, environmental, 186
genetic, 188
germicidal re-use, 430
hygiene, dry period therapy, 1683
infections, intramammary, 1685, 1688
new, 1686
quarters, 1685, 1687, 1688, 1689
organisms, 1686
somatic cells, 1687, 1689
kappa-casein changes, 674*
milk lipid composition, 677*
neutrophil estimations, 712*
origin, 194
pathogens survival at −20C, 417
S. *aureus*, 417
S. *agalactiae*, 418
phagocytosis estimation, 712*
quarter infections, 427
somatic cells, counted electronically, 711*
adrenocorticotropin, 712*
bacterial numbers, types, 1429
bacteria, production, 1428
cells vs. milk loss, 1431
flavor, 679*
milk yield regressions, 1430
S. *uberis*, charactersitics, 197
isolation, 195
serology, 197
teat apex microflora, 429
teat efficiency, 430
Virginia mastitis program, 395[s]
Meat
fat supplemented grain rations, 989
carcass yields, 991, 993
color acceptability, 994
dressing percent, 993
growth and digestible energy, 991
fat and protein, 993
feeding young bulls, 686*
Memorials
S. W. Mead, 1224
Alfred Herman Rishoi, 1796
A. W. Rudnick, 718
Elmer C. Scheidenhelm, 1331
Methionine
abomasal infusion, 710*
hydroxy analog, 460
amino acids, 985
blood plasma, 985
feces, 986
feed, consumption, 462
gross energy, 463
intake, 463
liver, kidney fractions, 356
milk, 986
production, 463
ration digestibility, 987
rumen fluid, 984
protein synthesis stimulation, 629
Mice
milk production, 1502
body, litter, milk weights, 1503
lactation curve, 1504
regressions, 1505
Milk Analysis
Babcock, 680*
fresh versus composites, 680*
infrared milk analyzer, 650
Milko-Tester, 652, 680*
automatic, 658
errors, improper mixing, 873
Mojonnier, 680*
Technicon AutoAnalyzer, 403
Milk
abnormal, control, 393[s]
electronic detection, 711*
amino acids, free, 392[s]
arsenic-fed cows, 706*
carboxymethylcellulose analysis, 42
calcium, heat, 36
cesium-137, 633
chocolate, CMC analysis, 42
composition, estrogens and thyroxine, 715
constituents, seasonal correlations, 1095
consumer prices, 302
copper content, 760
fractions, 759
curd strength, 299
demand elasticity, 306
diacetyl analysis, 384
emulsifiers and milk stability, 678*
fatty acid composition, 167
intake, output, 449
fenthion, 779
fluorometric vitamin A analysis, 1077
human, composition, 167
iron fortification, 678*
lactose, low, 670*
synthesis, 663*
lactoferrin-lysozyme interaction, 715*
lipase activity, flavor, 676*
lipolysis test, 1420
Rhodamine 6G standards, 1421
absorbance, 1421
acid degrees, 1422
bacterial counts, 1423
microscopic cell estimations, 380
neutrophil estimations, 712*
nitrate analysis, 644
nuclepore filters, 379
orotic acid, 663*
pepsin clotting system, 726
prolactin, native, 715*
psychrotropic sporeformers, 669*
quality, 392[s]
sales, 305
shelflife, 134, 135, 666*
somatic cells, adrenocorticotropin, 712*
counted electronically, 711*
estimations, 380
strontium-90, 633
sulfhydryl oxidase, 676*
synthesis, 1307
trace cations, 1666
regional distribution, 1668
variances, 1671
thyroxine-induced leukocytes, 716*
trypsin antioxidant, 753
amino acid composition, 755
copper binding capacity, 756

thiobarbituric acid number, 755
weights to nearest pound, 1517
statistics, 1518, 1519
whey protein characterization, 1237
Milk Fat
copper content, 762
depression, prevention, 1097
butanediol feeding, 1099, 1101, 1102
feed intake, body wt., 1102
fatty acids, 447
AM-PM, 448
fat and milk fat diet, 714*
gangliosides, membrane, 662*
globule enzymes, 662*
globule membrane, magnetic resonance, 1233
spectra: fatty acids, 1233, 1234
glycerol, 1234
globule morphology, 661*
globule ultrastructures, 1375
electron microscopic structures, 26, 1374
freeze fractured membranes, 1384
globule synthesis, 1386
vesicle formation, 1385
high grain depression, 715*
polyunsaturated, protected safflower oil, 714*
protected soybean fat, 714*
structure and synthesis, 919
fatty acid composition, 922
glycerides, 921
hydroxy compounds, 923
testing, 392[s]
triglyceride composition variations, 715*
unsaturation increased, 205
Milk Flavors
astringent, isolation, 1400
electrophoretic patterns, 1402
environment, 421
high, low, medium heat, 1404
procedures, 1401
evaluations, 302
feed volatiles, 22 compounds, 905, 907
concentrations, 910
thresholds, 910
fluorescent light, 678*
haylage, 575
gas chromatographic analysis, 575, 576
heritability, 424
newsprint, 1018
oxidized, 393[s]
casein-safflower, 678*
inhibitor, 648
simulation, 1507
copper induced, 1569
typical, oct-1-en-3-one octanal
vitamin C, E, 660*
trypsin antioxidant 753
somatic cells, 679*
vegetable oil fed, 677*
Milk Gels
heat-induced, firmness, 1225
calcium binding anions, 1226
cations, clorides, phosphates, 1227
cross linking, 1229
oxidizers, 1228
sulfhydryl groups, 1228
wheat gluten, 1229
heat-induced, nutritional value, 1073
amino acid composition, 1074
protein efficiency, 1074, 1075
renneted-gel syneresis, 913
calcium chloride addition, 916
coagulation, 916
heating temp, 916
pH, 916
Milk Proteins
characterization, 1544
chromatographically, skimmilk, 1545
electrophoretically, paper, caseins, 1546
whey, 1546
kinin activity, 1557
antioxidant inhibition, 1558
suppression, 1558
preparation, 1557
Milk Synthesis
aqueous phase secretion, 1316
anions, cations, 1318
lactose, monovalent ions, potentials, 1318
minor components, 1318
reabsorption, ducts, 1329
mouse mammary gland, 1308
dehydrogenase activity, 1311
hormones, 1312, 1313
glucose-6-phosphate, 1299
symposium, 1307
Minerals
arsenic fed, 706
calcium, heat, 36
balance, 772
negative, 774
removal, milk powder, 176
calcium, phosphorus absorption, 707*
intakes, 769
ratio, 707*
supplements, 250
copper estimation, 40
corticotropin injections, 1464
fluoride, high, low, 790
free choice, 245
hypocalcemia, hormones, 1613
magnesium absorption, 707*
phosphorus, negative balance, 770
positive balance, 771
vitamin D, 772
sulfur source, ration digestibility, 707*
thiamine, 123
techniques, 1211
zinc metabolism, 707*
Mozzarella Cheese
part skimmilk, 672*
underwater cheddaring, 672*
Mycotoxins
aflatoxin production, NaCl medium, 1415
Aspergillus flavus, + and − NaCl, 1416, 1417
Aspergillus parasiticus, + and − NaCl, 1416
feeds, dairy cattle, 1243
chemical structures, 1244, 1250
Aspergillus species, 1243
aflatoxins, 144
excretions, 1247
residues, 1246
Fusarium species, 1246
Pencillium species, 1248

NATIONAL RESEARCH COUNCIL
requirements response, 1327[s]
Nonfat Dry Milk
amino acid extraction, 671*
astringent flavor fraction, 1400
chromatographic extracts, 1403
electrophoretic patterns, 1402
fraction distribution, 1402
procedures, 1405
ultraviolet spectra, 1403
ionic calcium, curd tension, 1300
low- and high-heat, 1301
iron-fortified, 667*
nitrosamines examination, 1574
chromatogramic fractions, 1575
Nutrition

acetate, stereate utilization, 1481
amino acids, serum, 709*
ammonia-treated silage, 491, 709*
blood methemoglobin, 641
body weight, energy, 482
calcium, phosphorus absorption, 707*
ratio, 707*
sodium sulfate, 710*
calves, nitrogen metabolism, 1284
unsaturated fats, 718*
vitamin E deficiency, 498
chitinous-fed products, 690*
citrus pulp, 687*
concentrates, abrupt changes, 398S
buffered, fatty acids, 959
four feeding rates, 687*
pelleting, 1692
corn, dry vs. high moisture, 175
barley, net energy 685*
meal, oats, net energy, 686*
propionic acid-treated, 695*
dry matter intake, 322
net energy, 486
energy, balance evaluation, 714*
definitions, relationships, 945
dietary and production, 395S
digestible, 320
fetal growth, 482
measurements, 320
metabolizable, 321, 480
production, variable, 397S
estrogen-progesterone needs, 712*
fat-depressing ration, 688*
influence, 446
saturated, 439
feeding, mixed or separate, 398S
once-a-day vs. twice-a-day, 703*
intraruminally forced, 687*
feeds, complete, ad libitum, 688*
consumption variations, 454
feed intake, prepartum, 685*
fluoride, high and low, 790
body weight, 793
growth, 793
ingestion, 792
plasma, 794
skeleton, 796
urine, 795
vertebra, 797
forage, abomasal displacement, 787
concentrate ratio, 783
dry matter intake, 786
heat-damaged, 1276
grain intake, 693*
grain preservation, organic acids, 401S
gross energy efficiency, 441
iodine intake, milk iodine, 931
feed intake and growth, 932
iodine in feed, 933
milk production, 932
supplmentation, 933
liquid supplement, 398S
metabolites: free, total fatty acids, glucose, ketones, cell volume, 714*
methionine hydroxy analog, 460
analog conversion, 355
supplemented, 711*, 983
mineral interrelationships, review, 935
anion, cation, requirements, 939, 940
magnesium, 936
potassium, 936
ration calcium, phosphorus, 940
mustard meal, protein source, 710*
nitrogen utilization, 707*
nitrate analysis, 644
intake, 641
nutrient utilization, 698*
organic matter digestibility, 486
potassium, lactation, 399S
poultry waste feeding, 1261
cow's intake, production response, 1262
protein, abomasal infusion, 708*
blood composition, 397S
serum, 710*
dietary, 710*
for production, 396S
response, 708*, 1327E
solubility, 798*
thermal stress, 397S
ration-low fiber, digestibility, 1266
composition, milk yield, 442
roughage restricted, high grain, 399S
rumination particle size, 685*
safflower oil, daily vs. alternate days, 712*
sorghum grain, finely ground, 399S
high moisture, 701*
reconstituted, 979
soybeans, roasted, 529, 708*
digestibility, 530
intake, 530
sudangrass, iodine metabolism, 1487
sugarcane pellets, 398S
thyroprotein response, 689*, 1328
triticale, rations, 687*
urea administration, concentrate intake, 1470
corn silage, 805
body weight, feed intake, production, 809
for soybean meal, 397S
reproduction efficiency, 1290
response, 708*
utilization, 466
vitamin B_{12} trends, 474
liver, 477
urine, 476
zinc metabolism, 707*

Orchardgrass evaluation, with voles, 703*

PARASITES
hornflies, response to, 700*
Parturient Paresis
25-hydroxycholecalciferol treatment, 689*
Pasteurization
heat exchanger, slug flow, 667*
steam infusion heater, 536
flow, 538
holding, 539
steam injection, 179
ultra high-temp control, 667*
hold tube variations, 180
Pesticides
DDD, DDT, and DDE in fat, 706*
metabolites in newborn calves, 1500
dams' blood, milk, 1500
Physiology
acetate and propionate injections, 606
adrenocorticotropin intravenous injections, 1165
calves, catheter design, 1440
cerebrospinal fluid pressure, 1636
dye injection, 1444
implantation, 1191
duodenal route, 1444
ruminoreticulum metabo-

lism, 589
pressure, 1156
corticotropin and blood composition, 1464
corticoids, leukocytes, 1464, 1465, 1466, 1467
minerals, 1465
potassium, sodium, 1467
Flumethazone treatment, 700°
heifers, thermal stress, 400[8]
hydroxycholecalciferol treatment, 698°
in vivo absorption from small intestine, 1432
^{14}C-glucose absorption, 1435
recovery, 1437
portal-arterial, portal blood flow, 1434
iodine metabolism, 400[8], 400
lactation restoration, 400[8]
nicotinic acid metabolites, 699°
norepinephrine mobilized fatty acids, 926
free fatty acids, 927, 928
glycerol changes, 927, 928
lipase activity, 928
metabolic relationships, 929
rat, protein synthesis, 621
pigs, mammary gland nucleic acid, 1295
DNA and RNA, 1297
extractable material, 1299
Protein
bound iodine, 105
human, pH, 290
polysaccharides reactivity, 141

Quality Cottage cheese, 393[8]
dressing, 393[8]
forage quality, 702°
milk, feed volatiles, 905
concentrations, 910
thresholds, 910
22 compounds detected, 907

Rabbit
sex ratios, 681°
Ram
spermatozoa survival, 857, 858
Rat
immunoreactive prolactin, 715°
mammary protein synthesis, 621
electron cell micrographs, 624
radioactivity distributions, 625
membranes, lipid composition, 51
Golgi apparatus, composition, 54
enzyme activity, 52
fatty acids, 55
fractions, 53
Rations
feed intake, 326
group feeding, 325
mineral composition, 248
newsprint, 1018
optimum, 484
production, body weight, 326
roughage, restricted, 474
Red Sindhi Breed
heredity, age, body weight, 120
Reproduction
acrosomal proteins, protease, 696°
ejaculate characteristics, 1175
nonaged, 1175
monthly average, 1175
anestrous cows: culling, services, 599
bulls, reproductive organ weights, 1633
cows: culling, services, 599
environmental, hormonal factors, 697°
feeding urea on efficiency, 1290
experimental variable correlations, 1293
statistics, 1291
intake and calving interval, 1291
glutamate oxidative metabolism, 1005
rete testis fluid, 1006
heating, 1007
seminal plasma, 1006
spermatozoa, 1006
heifers, progestin feeding, 995
histochemistry, cervical mucosa, 697
intrauterine Lugols infusions, 695°
management, 401[8]
mare serum treatment, 527
medroxyprogesterone-treated, 600
melengestrol-treated, 601
nutrition, 402[8]
ovarian treatment, 528
phthalate esters for rats, 696°
plasma leutinizing hormone, 695°
postpartum estrous, 695°
postpartum interval control, 401[8]
preimplantation, postimplantation losses, cattle and sheep, 695°
progesterone synthesis, luteal tissue, 697°
prostaglandin tissue residue, 1330[E]
semen, atmospheric pressure, 681°
characteristics, 1632, 401[8]
diluted, 614, 856
fertility, 401[8]
freezing, 372
price, 854
properties, 373
spermatozoa, carbon dioxide, 519
exchange, 519
usage, 617
spermatozoa, fractionation, 522
female tract, 696°
isoantigenicity, 697°
metabolism, 518
motility, 375, 858
physical properties, 373
sonification, 521
survival, 659
toxicity, 616
transaminase, 375
zwitter ion buffers, 372
rabbit spectrum, epididymis, 696°
Reverse Osmosis
skimmilk fractionation, 1561
permeate flux, concentration, 1563
feed rate, 1562, 1564
pressure, 1562, 1564
protein conc, 1565
Ricotta Cheese
yield, 394[8]
snack-dip base, 394[8]
Roquefort Cheese
carbohydrate metabolism, 5
Rumen
amino acids, diets, 973
cows, 974
lower gut, 976
rumen digesta, 975
acetate and propionate, 1757
ammonia, 472
artificial, fermentation vessels, 1406
centrifuge tubes, flasks, screwcap, screwcap vials, vials, 1497
interactions, 1498
calves, ruminal digestion, 243
carbon acids transfer, 312
cations and acidity, 1330[E]

cellulose disappearance, 125
glucose specific activity, 309
fatty acids, 447, 469, 487
AM-PM, 448
diet, 442
in vitro, 980
in vivo, 980
induced fermentation alterations, 964
in vitro digestibility determination, 1305
variances and relationships, 1306
marker, polyethylene glycol, 1160
recovery,
concentration, 1163
rate, 1162
methionine analog conversion, 355
analysis, 272
protein synthesis, markers, 973

SHEEP
anesthetics and metabolite injections, 609, 611
poultry waste feeding, 163
carcass scores, weight gains, 1264
cations, kidney, liver, 1264
ration composition, 1263
Silage
ammonia-treated silage, 489, 490, 709*
intake, 492
production, 492
corn, acid treatment, 702*
blighted, 1302
composition, digestible, 1303
corn, 3 levels urea, 805
ammonia and urea N, 807
organic acids, 807
pH, 807
concentrates, high-low, net energy, 1106
formic acid, alfalfa-orchardgrass, 687*
hay added, 1328[E]
haycrop or hay, 701*
rye, nutritive value, 702*
60% and energy, 323
urea-treated, 703*
Skimmilk
calcium and heat, 35
casein fractionation, 25, 30
copper content, 760
curd strength, 299
fluorometric vitamin A analysis, 1077
iron-fortified, 668*
marker enzymes, 659*
protein changes, 201, 202
reverse osmosis fractionation, 1561
Salmonella newbrunswick, 16
Salmonella typhimurium, activity, 669*
Sow
polymorphism, whey protein, 331
Spores
Bacillus species 1405
heat resistance, 4 *Bacillus* species, 1407
skimmilk, added ingredients, *B. cereus* destruction, 1408
B. cereus, heat activation, 669*
psychrotropic, 669*
sublethal heat shock, 577
B. cereus, 578
B. licheniformis, 579
Starters
biosynthesis, flavor compounds, 1022
control of food-borne pathogens, 1019
diacetyl analysis, 384
dipeptidase activity, 675*
flavor defects, causes and controls, 1034
frozen cultures, 1029
lyophilized concentrate, 668*
LFE Bioenhancer, 671*
Steers
citrus pulp 686*
intraruminal forced feeding, 687*, 980
in vivo lactate, 981
lipoprotein lipase activity, 686*
low-fiber rations, 1266
composition, 1267
digestibility, cell wall, 1268
dry matter, 1271
fatty acids, 980
fiber, 1269
Swiss Cheese
carbohydrate metabolism, 5
split defect, 666*
Symposia
dairy cattle research techniques, 1188
dairy product cultures, 1018
milk synthesis, 1307

TEACHING
slide preparation, 275

UREA
abomasal casein infusion, 689*
concentrate intake, 1470
fermenting silage, 805
reproductive efficiency, 1290
response to, 708*
utilization, 466
body weight, 469
digestibility, 471
feed intake, 472
milk production, 469
urine, 472
Urethane Foams
urethane foams, whey powder, 1388
formulations, 1389
foaming properties, 1390, 1392
physical properties, 1392
whey powder substitution, 1394

VITAMINS
calves, minimum A, 232
B_{12} trends for cattle, 474
E deficiency, 498
riboflavin isolation, 263
thiamine degradation, 123
yogurt, B-complex, 660*

WASTE DISPOSAL
animal, *Lumbricus terrestris*, 870
treatment, 394[S]
Water
copper estimation, 40
fecal coliform counts, 392[S]
minerals, 249
Whey
amino acid extraction, 671*
canine, component A, 1554
amino acids, 1555
cereal supplement, 1081
amounts, 1082
corn, rice, wheat, 1083
delactosed powder, urethane foams, 1388
denaturation, micellar casein, 767
ewe's proteins, 673*
hexametaphosphate, protein recovery, 673*
human, whey proteins, 291
hydrogen peroxide denaturation, 569, 570
lactose determination, 678*
N residue separation, 668*
peroxide-induced changes, 673*
polyethylene glycol, 673*
polymorphism, 332
protein fractionation, 668*, 673*, 1237
electropherograms, 1238, 1239
immunoelectropherograms,

1240, 1241
schlieren patterns, 1241
spray-dried, 667*
White Cheese
cow's milk, 672*
food ingredient, 661*

YOGURT
B-complex vitamins, 660*
flavor defects, control, 1035
flavor production, 1571
acetaldehyde, lactic acid production, 1571
content, 1572
time, 1572
L. bulgaricus, S. Thermophilus, 1571
tumor-cell inhibition, 660*

ERRATA

N. L. Jacobson. 1969. J. Dairy Sci., 52:1318. The growth requirement in Table 2 is in kilocalories per gram of body weight gain and not per kilogram of body weight gain.

M. R. Gebauer et al. 1970. J. Dairy Sci., 53:817. On page 818, first column, third paragraph under General Procedures, the printed sentence is: Variance was analyzed (20), including, when appropriate, regression analysis (22). This sentence should be: Data were analyzed by analysis of variance (20), including, when appropriate, regression analysis (22).

S. H. C. Lin et al. 1971. J. Dairy Sci., 54:751. Corrected title: Sedimentation and size characteristics of skimmilk casein micelle fractions obtained by rate-zone ultracentrifugation.

G. E. Miller et al. 1971. J. Dairy Sci., 54:796. Incorrect sentence: During the first week after the recommended dose (45.5 mg/kg), SEZ concentrations were determined in blood plasma and milk. Corrected: During the first week after the recommended dose (220 mg/kg), SEZ concentrations were determined in blood, plasma, and milk.

K. E. Beery et al. 1971. J. Dairy Sci., 54:912. The last half of the title for Figure 2 was omitted. Lower plate: Portion of Golgi vesicle from lactating bovine mammary tissue. Vesicle is pressing against plasma membrane towards alveolar lumen (L). Note area where plasma membrane and Golgi vesicle membranes is fused (arrow). Dark granules within vesicle are casein micelles. × 71,000.

Aldo Ferretti and Vincent P. Flanagan. 1971. J. Dairy Sci., 54:1764. The line corresponding to the twenty-second compound in Table 1 should be: 2-Methyl-5-furfuryl 2′-furfuryl ether[c] . . . 81(100), 95(42), 192M+(24), 53(22), 96(13), 39(11), 27(7), 52(7). For the next compound, no mass data are given.

T. A. J. Payens. 1972. J. Dairy Sci., 55:141. The title should be: Protein Reactivity of Polysaccharides, Especially of Carrageenans. Page 147 should be 145 and page 148 should be 146. In the second line of the last paragraph of the first column on page 145, the word "cooperative" should be substituted for the word "associative."

A. Miller et al. 1972. J. Dairy Sci., 55:666. Line 12 of abstract M32 should be moles per cent. Line 16 should be: Like *Streptococcus lactis* var. *Maltigenes*, all strains produced 2-methylpropanal, 2-methylpropanol, 3-methylbutanal, and 3-methylbutanol.

INDEX